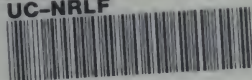


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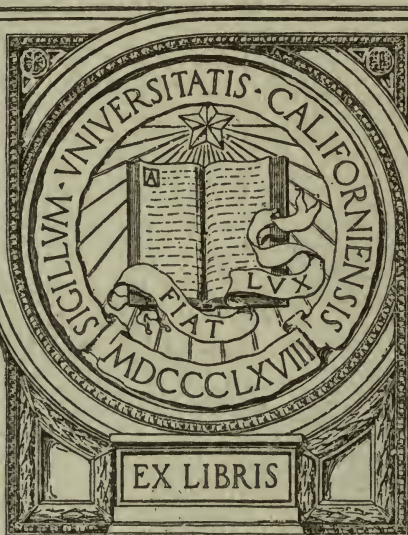
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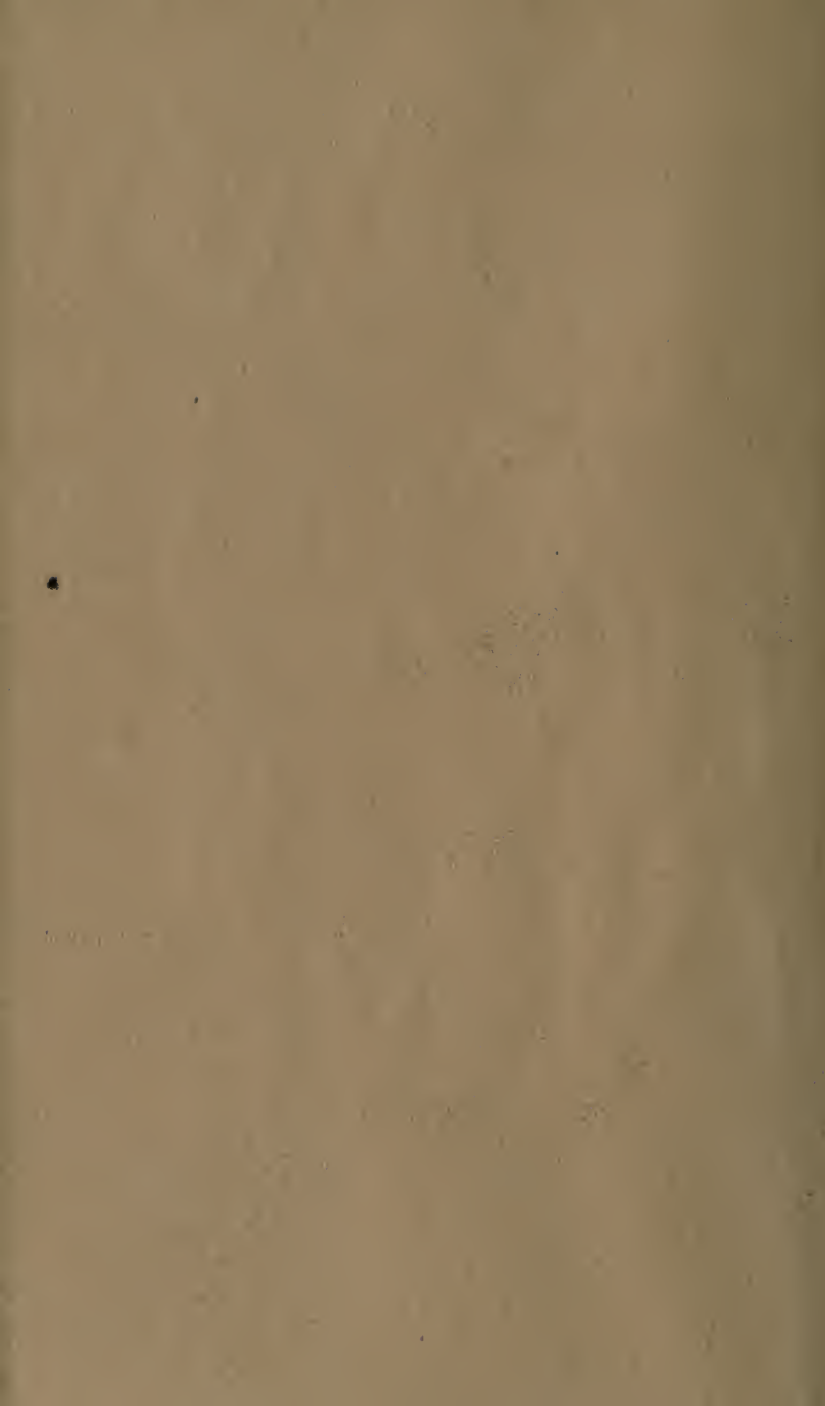
T.C.

The 1913

FLOOD

*And how it was
met by a railroad*





THE 1913 FLOOD

AND

HOW IT WAS MET
BY A RAILROAD

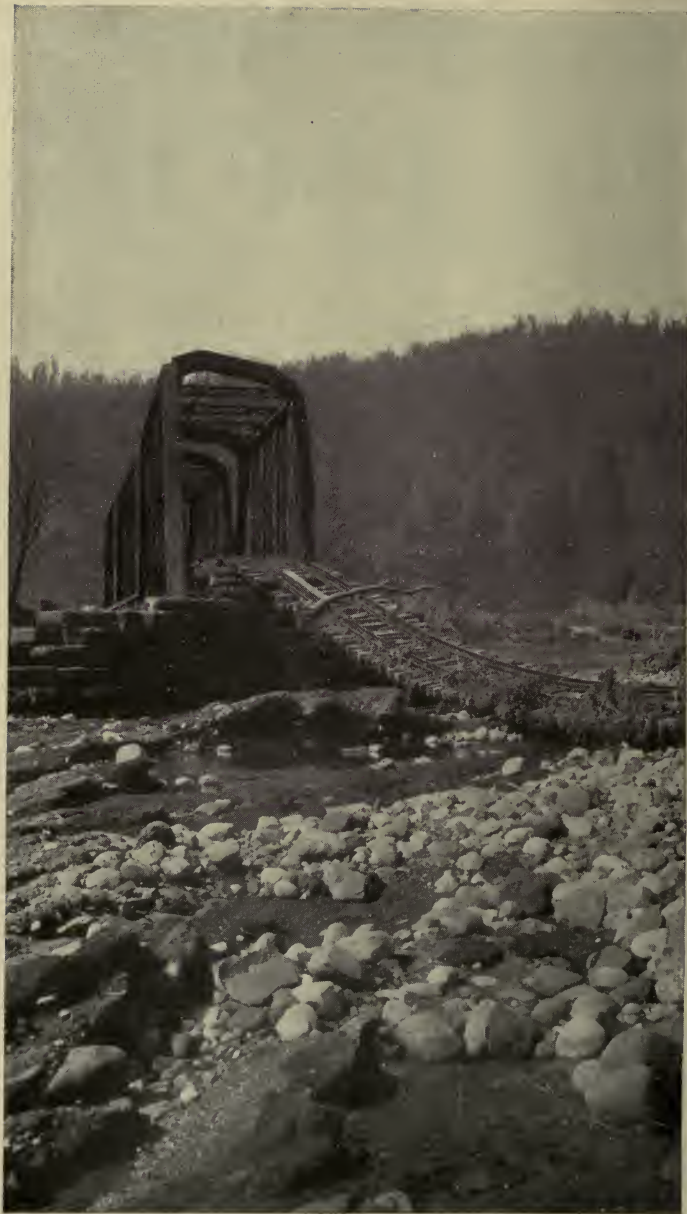
BY

LEWIS S. BIGELOW

ISSUED BY

THE PENNSYLVANIA LINES
GENERAL OFFICES, PITTSBURGH, PA.

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Bridge Over Mohican River After the Flood

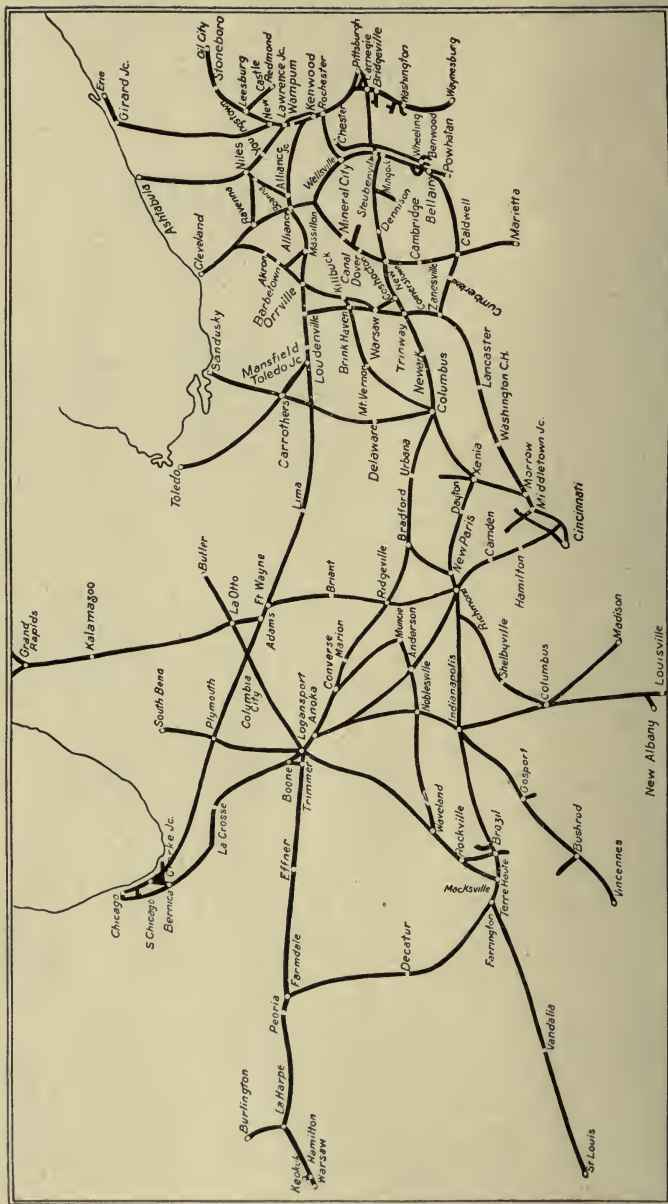
The 1913 FLOOD

WITH a terrific and irresistible rush the 1913 flood attacked the Pennsylvania Lines west of Pittsburgh. The battleground chosen for the fiercest onslaught was in the States of Ohio and Indiana. In Ohio particularly the Muskingum, the Scioto and the Miami Rivers burst their normally narrow banks and from Pig-mies became Titans. Like the Titans they were in rebellion. They fought their battle like Titans. They did enormous damage. But in the end man conquered them. You may find here a record of some of the difficulties they heaped up and how these difficulties were surmounted and overcome.

* * * *

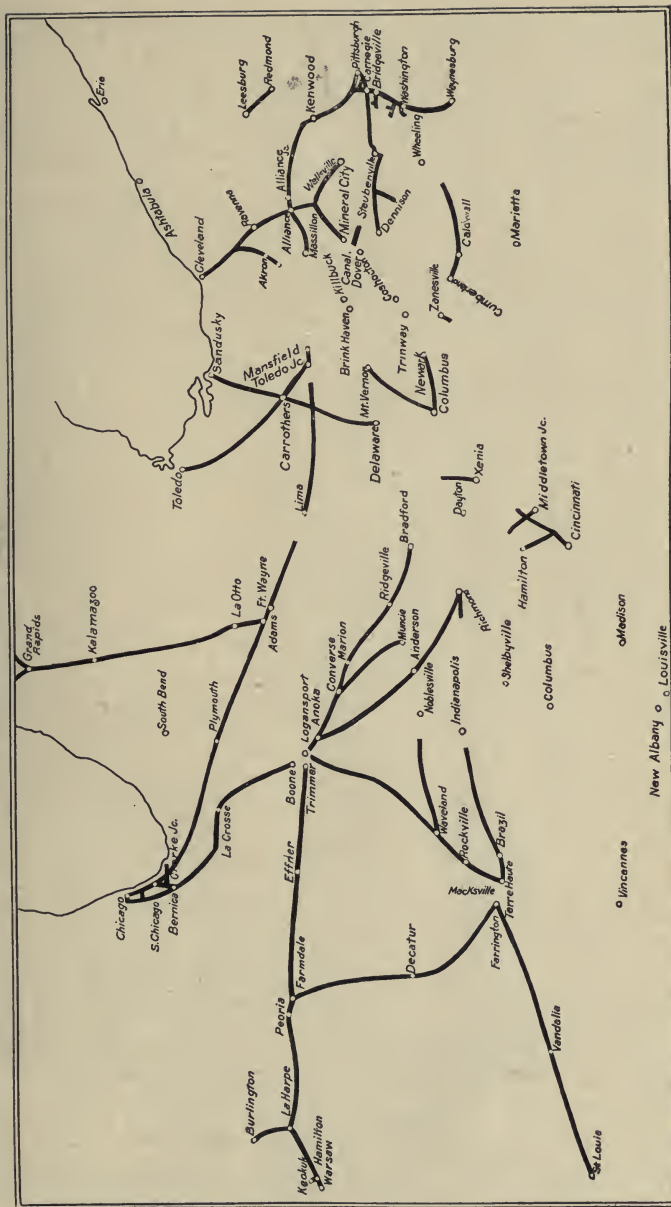
There is a watershed running northeast and southwest through the northern part of Ohio. To the south it drains by the valleys of these three rivers into the Ohio River. Dayton, Zanesville and Columbus are the three principal cities in these valleys. Each one had the flood of its existence. In Ohio alone there were destroyed 22,000 houses, while 35,000 were seriously damaged by water. A few miles above Zanesville the Muskingum Titan produced a raging lake fifty-one miles long; and this over the main line of the Pennsylvania System between Pittsburgh and Columbus. On the north was found another east and west lake of a length of thirty miles—and this covered the main line of the Pennsylvania between Pittsburgh and Chicago.

Lines Before the Flood



The Pennsylvania Lines West of Pittsburgh in Commission March 26, 1913

After the Flood Came



The Breaks Show Where the Track was Out of Commission—The Impossibility of Through Train Service is Obvious



Looking North from West Side of West Gap, Macksville, Ind. (Vandalia Railroad), March 28, 1913

The term "lake" is, however, misleading. It means here stretches of water over what is ordinarily dry land—land which civilization has taken for its own, on which it has built its towns and villages, laid out and cultivated its farms, and over which it has constructed its railways and electric lines and its roads for ordinary travel.

These "lakes" were anything but pacific creatures. They were filled with rushing, boiling currents so powerful that, during the zenith of their existence, no ordinary boats could live in them. They tore out embankments, carried steel-girder bridges long distances and ate away the soil of thousands of acres of fertile land, depositing in its place sand and gravel and stones.

Governor Cox, of Ohio, in the early days of the flood, gave out a statement, to the effect that the disaster would prove to be a greater one than the San Francisco earthquake. This was regarded, in some quarters, as one of the wild reports emanating from the flooded district. It has proved more than literally true. It should be borne in mind, too, that there was no insurance against the losses occasioned by the flood. Even after the abolition of temporary relief some 16,000 families required financial relief in order to return to house-keeping.

Generally speaking, there fell on this Ohio watershed, in less than three days, more than three months' normal rainfall. And it came when the ground was thoroughly soaked and every river and stream filled to its limit. The only wonder is that the damage and the loss of life were as small as they were. Governor Cox says that in Ohio alone the population affected numbered a million and a quarter souls, and that the direct money loss was above \$300,000,000.

Railroad Paralysis

This was the situation that confronted the Pennsylvania Railroad in the last week of March, 1913. Its lines all through Ohio, running from east to west and from north to south, were literally shot to pieces. Bridges were gone; tracks and embankments swept away—holes in a thousand places; no through line anywhere. Its telegraph and telephone system, too, was a temporary wreck. Passenger and freight trains were marooned, and above 1,250,000 human souls were dependent upon the railway as a means of bringing them the aid and succor they needed in the shape of food, medicines and the ordinary necessities of life.

The Pennsylvania was not the only railroad that suffered. It would have been much simpler had that been the case. Then one railroad could have helped the other with its men and its tools.

The labor market also was as bad as possible. Every city needed every available man for its own work. When the water receded, streets and houses were left covered with a deposit of mud and slime from six inches to a foot and a half in depth. Wreckage and filth removal were imperative for life and health.



One-quarter Mile East of Port Washington, Ohio



Bridge Over Black Fork, which had to be Entirely Replaced

So the Pennsylvania had to depend on itself. There was the general staff in Pittsburgh with its hands on the keys, and its sixteen divisions sometimes in touch with headquarters in those first days, but usually isolated, each working out its own salvation.

There were no eight-hour days, no coming home in the evening, no meals with the family. The army was in the field, and in an incredibly short space of time, with the obstacles confronting them, the havoc wrought by the Titans was repaired. No body of men working for money merely could have done what this army did.

The Company did endeavor to show at least some of its appreciation of the loyalty of the men when its mason and carpenter gangs and shopmen engaged on damaged portions of the roads for more than twenty-four hours were paid one and a quarter times for all hours worked, including the time consumed en route between headquarters and their work. Extras were also paid to individuals called on or volunteering for unusually hazardous work. Bonuses were paid to all classes of labor in varying amounts, reaching down to the track laborers who had been in continuous service of the road about a year and who were employed on washout work. The bonus to each of these latter was \$10. The pay

checks bore the sentence: "As a token of appreciation of the spirit of co-operation shown during the recent flood." These bonuses and extra allowances amounted to more than \$70,000.

* * * *

Samuel Rea, president of the Pennsylvania System, made this comment on the flood and on the way the disaster was met by the regular organization of the Company:

"The officers and the employes of the Pennsylvania Lines west of Pittsburgh have done remarkably efficient work in restoring their lines to service. Immediately the seriousness of the storm damage was known, the Company placed all its facilities at the command of the State authorities of Ohio and Indiana for the relief of the afflicted area.

"Simultaneously most energetic efforts were instituted to repair the various lines and re-open them without delay to the service of the public. That this work has been done so promptly, so carefully, and with such freedom from casualty reflects every credit upon the officers and employes faced with responsibility for meeting this extraordinary emergency.

"No event in the history of railroading in this country has shown more convincingly the necessity for the railroads to be permitted to earn sufficient revenue not only to make reasonable return on invested capital, but also to have a surplus sufficient to meet emergency expenditures like these and to improve the properties in those respects which, even if not adding to gross revenue, make the lines better adapted to withstand the ravages of storm and flood and the better able to perform their duties to the public with efficiency and satisfaction."



Bridge Over White River at Muncie, Ind.

I

The Coming of the Waters

Rain began to fall in extreme northwestern Ohio Sunday morning, March 23d. In the succeeding four days there was a total precipitation extending over the State ranging from more than eleven inches at Bellefontaine down to two and seven-tenths inches at Marietta, the average for the State being from seven to eight inches.

What rainfall of ten and eleven inches means can be best appreciated when it is known that the average yearly rainfall in Central Ohio is only 39 inches. Thus there fell four months' rain in four days. At Zanesville there was a depth of water fifteen feet in excess of anything ever previously experienced there.

Before the arrival of the main storm, a windstorm, March 21st, struck the western terminals early in the morning, and traveled eastwardly over the entire lines. The gale blew all day, but as night approached moderated considerably. Poles were blown down, trees were uprooted and hurled against the telegraph lines, breaking them down, or limbs of trees were carried into the line, breaking and crossing the wires; and at a number of places roofs of cars were whisked into the wires. In fifty-five places all the wires in the line

were broken and communication totally disrupted for several hours. Where the pole lines were weakened the wind, swaying the poles, caused the wires to swing and cross intermittently, rendering them of practically no value as communication mediums. Sleet, loading and weighing down the wires, added to the trouble. On top of all this came the flood.

In the days that followed there were many instances of individual heroism and ingenuity. With about 160 telephone and telegraph line repairmen in the field, never a complaint was received from one of them as to what was expected of each during the crisis. In some cases it was necessary for the men to travel all night and then work for twelve or fifteen hours in drenching rain, facing hardships of other and more dangerous kinds. But every lineman grasped the situation and worked with vim and willingness and disregard for self.

* * * *

The Pennsylvania Railroad, on its lines west of Pittsburgh, has some 3103 miles of line. This is divided for operating purposes into three systems—the Northwest, the Southwest and the Central—with, respectively, 1004 miles, 1423 miles and 676 miles. The Southwest System is known as the Panhandle. These systems are subdivided into sixteen divisions. For all practical purposes each one of these divisions is a separate railroad, fully organized and equipped. Each one is well able to take care of itself in any ordinary condition of affairs.

Every one of the divisions suffered from the flood except the Chicago terminals. In bridges alone there were seventy-four steel structures either entirely destroyed or rendered unsafe for the passage of trains; there were thousands of washouts, ranging from comparatively small breaks to sections of roadbed two miles in length.

On Monday, March 24th, while the rains that were to cause the floods were increasing in vehemence, there was no real trouble on the Pennsylvania Lines.

On Wednesday morning, March 26th, the three great systems of the Pennsylvania Lines west of Pittsburgh were paralyzed—the flood was at its height. Wire and telephone communications were cut to pieces as well. No such condition of affairs had ever before existed in the railway history of this country. A railroad army of 61,000 men was set back on its haunches, its companies, regiments and divisions isolated.

Because of the preliminary storm most of the telegraph repair gangs were concentrated at Chicago, and by this Monday, the 24th, the wires were again in fair working order.

There was not a great amount of reserve material on hand, since so much had been required by the lines affected to repair the breaks. The superintendent of telegraph, who had been in Chicago in personal charge of operations, had gone to bed this Monday night thoroughly tired out, but happy in the thought that his poles were again in place and his wires in order and working



Bridge No. 83, Over Kokosing River. Steel Work of Both Spans Gone Out. One Pier and One Abutment Destroyed

properly. His rest was a very short one. He was almost immediately ordered back to Pittsburgh, and had great difficulty getting there.

The General Superintendent of the Southwest System, too, was in Chicago. He wrote a letter on the 24th to the general offices in Pittsburgh, saying that he was glad that matters were now running so smoothly after the recent western troubles. That letter was not received in Pittsburgh until Saturday, March 29th, five days after it was mailed. Such was the paralysis of mail service.

On this same Monday a dispatch to Pittsburgh announced a heavy storm over the Richmond division—which runs from Cincinnati, Ohio, to Logansport, Ind.—but contained the news that the “rain had cleared in the north” and that though still raining on the south “don’t anticipate any further trouble!”

With the advent of Tuesday, March 25th, however, there was a sudden change for the worse and the day’s dispatches read like the wrecking of a road. Through the messages received in Pittsburgh—the headquarters of the Pennsylvania Lines west of Pittsburgh—from twelve divisions the serious character of the disaster became apparent early.

It was a curious fact that the one division reporting itself in running order was the Zanesville division which was to turn out later as the one hardest hit. The Zanesville division runs from Trinway to Morrow. Zanesville is not many miles directly south of Trinway in the Valley of the Muskingum River. The floods were to cause frightful havoc from Trinway, both north and south. The waters rushed over Trinway at such a depth and with such force that many cattle—both cows and sheep—were caught in the telegraph wires, driven along the wires to the cross pieces and there securely wedged.



Franklin Bridge, New Castle, Pa., March 27th, 2 P. M. Old Black Bridge Lodged Against It



Franklin Bridge at the Moment It Fell



Franklin Bridge, 6.30 P. M., Showing Total Collapse

Bulletins of Devastation

A brief summary of just a few of the dispatches received during the early hours of Tuesday, March 25th, may give some idea of what was happening to the country covered by this railway system on which there are rather more than twelve hundred stations, both great and small.

On the Pittsburgh division, running from Pittsburgh to Columbus, Ohio, there were landslides at three different points. This is the main line for the fast 24-hour Limited between New York and St. Louis. It is an old seasoned roadbed in fine condition, and over it could be safely made as fast time as on any track in the country. There was to be a lake fifty-one miles long stretching over a portion of this division.

The Indianapolis division, which runs from Columbus, Ohio, through Piqua to Indianapolis, reported trouble at seven points: A bridge under water; a bridge washed out; an unsafe bridge; water over tracks; tracks washed out; landslide and bank slipping. A train from this division detouring over the Big Four was wrecked at West Liberty, Ohio, and three trainmen reported killed. A Big Four pilot, who had gone ahead to note the conditions of a bridge, was walking on it when a span went out and the last seen of him he was on this span as it was swept down the river. There was no way in which aid could reach him.

The Richmond division had three landslides and high water. The Cincinnati division had a culvert washed out, water over the tracks and water up to a bridge. Incidentally, it was reported that it was raining hard. Dayton is on this division.

On the Louisville division, which runs through Indianapolis, the reports from two points read: "Heavy

wind; water over tracks; trains cannot move," and "Still raining."

From Logansport, dispatches announced that there were six inches of water over the station platform; a concrete bridge was out, and nothing could be moved between Logansport and Chicago. It concluded: "River rising fast; still raining."

On the Eastern division, which runs from Pittsburgh to Crestline and is substantially the eastern half of the main line from Pittsburgh to Chicago, in one short stretch between Perrysville and Lucas one bridge was washed out; one other was covered by water, with this additional information: "Don't know whether it is still there;" while a third had sagged three feet in the center, and a fourth was "in bad shape." Tracks to either approach of these four bridges were badly washed.



William Street Bridge, Delaware, Ohio



Delaware, Ohio, After Water Began to Subside

Between Mansfield and Toledo all the culverts were weakened and unsafe. There was water over the tracks in the Mansfield yard and in the passenger station. On the Cleveland and Pittsburgh division there were landslides, washed tracks, washed track sidings and stations blocked with rubbish. On the Erie and Ashtabula division, between Pittsburgh, Erie and Ashtabula there was trouble at fourteen different points.

The Toledo division, which connects Columbus with Toledo and Sandusky, had reports of damage from five centers; three of which were washouts and the other two water over the tracks. Bay Junction sent the news: "Water over tracks. Cannot get into or out of Sandusky." And Delaware wound up with: "No wires south of Toledo."

* * * *

Before the flood subsided Delaware was to gain the high-water record. Here the 1913 flood exceeded in depth of water anything previously recorded in that city by fifteen and seven-tenths feet, thus surpassing Zanesville's fifteen feet by seven-tenths of a foot. It was at Delaware that a Big Four bridge was washed out; and so terrific was the force of the current that a great sixty-foot steel girder was carried down stream more than two hundred yards, and when the waters subsided it was found on a hillside on high ground, well removed

from the bed of the stream. A man was on this bridge when it went out. He was swept into the branches of a tree and managed not only to hang onto them, but to climb a little higher out of the water. There he remained for forty hours, and was eventually rescued after many unsuccessful attempts had been made to get to him.

Strange to say, as has been already remarked, the Zanesville division reported that it was all right. Its turn was quickly coming. The waters that tore out the bridge between Perrysville and Lucas—the Mohican River—was on its way to join the Muskingum and establish a new flood record in the city of Zanesville, fifteen feet in excess of anything Zanesville had hitherto experienced. The fact that the flood reached Dayton before Zanesville was attacked accounts for the greater prominence of the former city in the first dispatches.

It is like piling Pelion on Ossa to give in detail the separate messages of destruction which followed one another in quick succession this Tuesday. A small frac-



Winter Street, Delaware, Ohio. X Marks P. R. R. Depot

tion of them may help to an appreciation of what was happening to the country generally—the cities and their inhabitants, the country side and its inhabitants.

The message announcing ten feet of water in the passenger station at Dayton was sent the 25th, but received in Pittsburgh at ten minutes after twelve o'clock Wednesday morning the 26th. This was followed eighteen minutes later by a telegram from Columbus, Ohio: "It is reported that Lewistown reservoir, Logan County, Ohio, has broken, which, if true, will put a tremendous body of water in Great Miami River, affecting Sidney, Piqua, Troy, Dayton and Hamilton." Lewistown reservoir covers a tract of country five miles long by three miles across. There was yet to be received the telephonic message from Columbus in which the speaker at the Columbus end of the wire said that while he was

telephoning he had seen and counted ten houses slip into the river. He was looking from the windows of a tall building on the side opposite and in full view of the section flooded.

One may conjure up a picture from this telegram: "At Bridge 141, near Perrysville, Eastern division, there is a house lodged against the bridge. Eastern division reports, a few minutes ago, there was another house floating down the stream and right back



Bridge No. 3, Four and One-quarter Miles West of Columbus. Note Cleavage in Pier



Bridge No. 141, East Division. East Abutment Partly Washed Out. 100 Feet of Embankment Washed Out

of it was a covered bridge floating, too, and that Bridge 141 is very liable to go out. It is a 94-foot deck plate girder bridge, 8 feet deep." It went.

At 9 A. M. a telephone message from Zanesville reported a 5-inch rainfall, and that the Muskingum River was due at flood stage in twelve hours. The rise came so quickly that the superintendent of the Zanesville division was marooned in his own house for two days.

At 9.36 A. M., from Akron, Ohio, after a list of damage done, including the grounding of wires, the dispatch concluded: "Unable to detour on account of other lines out of business. Water higher than flood of 1898. Still rising and raining." After the flood of 1898, which before this year was a record, the Pennsylvania raised the level of all its tracks and bridges at least one foot above the flood line. It was then never expected that a flood equal to that one would be seen again in this country.

Dayton in Distress

At Dayton the railroad bridge over the Miami was already unsafe. There were 2 feet of water in the passenger station there, and a passenger train standing in the station was surrounded by water. The passengers on this train had a very exciting experience. Before the train was stalled there was a great ringing of bells and blowing of whistles all over the city. This was the warning to the people of the coming of the flood—and rumors had it that the city would be engulfed. The streets were filled with excited men and women running hither and thither. The water rose so rapidly about the train that it was necessary to lift the passengers to the roof of the depot porch and thence into the second story of the depot through the windows. More than 190



Second and Main Streets
Dayton, Ohio

persons there were, all told, and their only food for two days such as the depot chef and his assistants could save. From the high tower of the depot, when the flood was at its height, one of the marooned passengers said that the only dry spots in sight were the National Cash Register buildings and grounds and a few other buildings and grounds in that section of the town. All the rest

was a waste of water. It boiled past and around the depot, littered with débris. There were many horses in the flood. The only light that night was supplied by burning buildings in the different sections of the city.

At 12.47 P. M. came information that "Our train No. 3 is surrounded by water, with 2000 feet of track out behind the train. The Big Four pilot is on the bridge across the stream, but cannot be reached on account of the swift current. One of our brakemen, who was also on the bridge, has disappeared. Big Four trainmaster on the ground, and says he will arrange to feed passengers, but I do not understand how, neither does superintendent of Big Four. In the meantime, we are trying to secure a motor boat to reach passengers."

This was a passenger train from Columbus for Chicago. It left Columbus Monday night, but on account of a damaged bridge it was detoured over the Big Four Railway from Urbana. While running over the Big Four its engine went through a bridge at West Liberty and the sleeping car "Eaton" into the Mad River. There were about fifty-five passengers on the train, mostly for Chicago and points farther west. Seven received slight injuries. A physician on the train rendered aid to the injured by means of the First Aid boxes. The electric lights held out well and saved a panicky condition. Passengers breakfasted on confiscated express consignments.

The relief train could not get within two miles of the place where the accident took place on account of a bad washout, but sent two doctors, who reached the passengers at 4 A. M. By noontime the women and children had been carried around the break in wagons, while the men had climbed over the undermined tracks. All this was accomplished in a driving rainstorm. The relief train was backed into Urbana, where the passengers were made comfortable.



Zanesville Terminal Railroad, Licking Bridge
in Background

At 6.15 P. M. there was this telegram from Chicago: "In the absence of anything like definite information from points on the Southwest System, we have arranged for two cars of piling, which is now being loaded, and also for several cars of bridge material, which are also being loaded. We have borrowed a pile-driver from the Western Indiana Railroad, together with a full crew for same. We are fitting up two commissary trains, which will be able to leave Chicago late this evening—one of these trains to go with the Western Indiana pile-driver. We are getting all the heavy slag we can, and in addition to this we have already started a train of cinders east. We assume, from the meagre information we have been able to get, that the most serious damage between here and Columbus is at Piqua, and that Piqua is where the pile-driver, filling and other material will likely be needed first."

At 6.30 P. M. from the same source came notice of an arrangement with the Pullman Company for ten

tourist sleepers for use, if *needed*, at washouts. The telegram concluded, "This is all we can get." The transportation of the United States Army to the Mexican line had stripped the territory about Chicago of tourist sleepers.

At 6.48 P. M. news was received that a work train had gone into a creek: "Four Italians and the extra gang foreman were drowned." These, with the death of a foreman killed by the overturning of a pile driver, were the only serious casualties to workmen in the entire flood period.

At 7.45 P. M. the operator at Morrow telegraphed that he had lost all wires to Cincinnati, and that the water would be in the Morrow office in an hour.

At 9.35 P. M. the town of Morrow, southern terminal of the Zanesville division, was under water.

* * * *

In the late afternoon the main office of the Pennsylvania Railroad at Philadelphia sent this telegram to Pittsburgh headquarters: "Can we be of any assistance sending either men or material? Call on us for anything you may require."

"May call upon you to-morrow," was the answer. "On account of wire trouble we have not been able to get full details of our damage, but so far as we can now see will probably be able to provide men and material enough to take care of ourselves. It looks now as though bridge material and pile-drivers will be what we will need the worst. Have you any you could let us have?"

"Can you advise us," was the reply, "where you want the pile-drivers, and what bridge material shall we send?"

The last record of Tuesday, March 25th, was laconic and typical of what was to follow in the succeeding days: "Muskingum River bridge at Tyndall, main line, Pittsburgh division, went out at 10.15 P. M. Entire

bridge, 600 feet long, is gone." This bridge was to be the objective point of the construction forces, working from either end of the Pittsburgh division. Fourteen hundred men were to join hands here when the trestle was completed that would again give direct connection between Pittsburgh and Columbus. But the line was not to be opened until the night of April the 13th, and the task required 1400 men, working day and night for almost three weeks.

The bridge at Tyndall was a point in the 51-mile lake, with water 33 miles to the east and 18 miles to the west. A little 4 horse-power motor boat, the *Ora May*, made the 33-mile trip overland—in water. For many days after the flood had partially subsided, the *Ora May* supplied the means of crossing the Muskingum River at Tyndall. Her original objective was the rescue of a telegraph operator, marooned in his tower near the bridge, where he spent some forty hours without food to eat or drinking water.

From this day's beginnings matters went rapidly from bad to worse. No such flood had been dreamed of as possible in this section of the United States. In Montgomery County alone—Dayton is in Montgomery County—there were swept away and destroyed more than 500 bridges, great and small. This record of a single county may help to an adequate conception of this flood and the magnitude of the disasters attending it.

And still the rain kept falling and the waters rising!

II

The Fight for Existence

By Wednesday morning, March 26th, the battle was on in deadly earnest. And it was a battle. It mattered little that the enemy was a natural force instead of a body of armed men. Armed men would not have waged war so relentlessly—they might have had some regard



Bridge No. 145, Eastern Division, Over Black Fork
Pier and Both Embankments Badly Damaged, 100 Feet of Embankment Washed Out

for the weak and defenseless, for the women and children. The flood's object was plain destruction, animate or inanimate objects—toward both its enmity was equally implacable.

The plan of campaign was simple. The first duty of the Pennsylvania Lines was to extend relief, relief to its marooned passengers—men and women who had intrusted themselves to its care; relief, too, to the stricken cities. Then, it must open up to traffic its main lines, and afterward the branch lines.

Every minute lost added to the sum total of human misery. Those in the cities who had escaped drowning were suffering and in danger of starvation.

On this Wednesday, not only was the Pennsylvania Railroad west of Pittsburgh a wreck in the sense that every division was affected, but all other roads in Ohio were in equally bad shape. There was the Erie Railroad, with its double track of main line; the Baltimore and Ohio, likewise; the Wabash, with its single track, and the Pittsburgh and Lake Erie, and all their branches. Telephone and telegraph wires were down almost universally. Conditions could not have been much worse. The flood seemed to be in complete control.

No railroad knew or could find out what sections were available for use; but by roundabout methods, by "feeling," for want of a better term, or "smelling," some sort of connection was always possible. A wire would work so far, if only intermittently. This point reached, feelers would be put out, and in the end there would be made some sort of a means of communication. Of course, the different sections of the railroads, with all their possibilities in the way of freedom from flood damage and quick rehabilitation, were known, and with these as a foundation the work of relief began.

"Whatever railroads we have left, crippled though they are, are at your disposal; use them," was the message carried in person by the division superintendents

to Governor Cox, of Ohio, and Governor Ralston, of Indiana. They did use them. The railroad's officers were in daily and more than hourly communication with Government officials. Whatever requests were made were acceded to without a word. Cars and trains were hauled, troops and supplies were moved. It was just a matter of hitching on engines and doing it. They loaded the wires with messages locating relief and supply trains and keeping the officers of the Government posted as to the movement and location of these trains. There was no suggestion of commandeering railroads. Everything was offered immediately, and absolutely without price. For any relief or Government work there was no suggestion of a pecuniary return. The predominant idea was to relieve human suffering and to save human life.

And, when the waters had subsided, the Pennsylvania went to Governor Cox and said that many people with a curious turn of mind, or with worse intentions, might wish to buy railroad tickets to Dayton, Zanesville and other cities. The company would have no option but to sell this transportation. It was suggested, therefore, that the Governor take into his hands the decision as to whom tickets could be sold, and thus protect the demoralized communities from any additional and unnecessary burdens. This suggestion was immediately acted upon. Nobody could go to Dayton or Zanesville unless the Governor said so.

Logansport and Fort Wayne had asked the Government for life-saving crews. The Pennsylvania, having these stations on its road, and knowing the necessity for prompt action, had two of these crews with their boats and full equipment on a special train, and started for the flooded cities before the Government had even asked the Pennsylvania for transportation. These crews arrived in time to do great service.

A Railroad's Organization for War

To understand what was done in the campaign against the flood and how it was done, it may not count as a digression to explain generally the organization which fought the battles.

As early as Tuesday night the Board of Strategy was in session in Pittsburgh. From that time until Sunday, April 5th, it was in continuous session day and night. The "Board of Strategy" was made up of the higher general officers of the road and their assistants, with their consulting staff of engineers, motive power and transportation men.

Everything was done in the name of the General Manager. What was going on in the sixteen divisions of the road was reported to this Board, and it was thus in absolute control of and in touch with the situation. Its information was made possible by the work of the Superintendent of Telegraph, who had moved his offices next to that of the Board of Strategy, and was there carrying on his campaign of wire restoration. For the first thirty-six hours every one was on duty; after that they averaged eighteen hours a day individually.

The three general superintendents of the three systems—the Northwest, the Central and the Southwest—established headquarters where they could be in touch with their own divisions and with headquarters at Pittsburgh.

* * * *

Now, the general organization of the road is very simple, and it may be interesting to the lay reader to explain it, beginning at the bottom and working to the top.

At the foundation are the laborers and trackwalkers. The trackwalkers are continuously on duty patrolling the tracks. If a trackwalker finds anything amiss he immediately notifies his section foreman, who gets out his gang and repairs the damage or reports to his imme-



Track of Main New York-St. Louis Line Near
Newcomerstown, Ohio

diate superior officer, the supervisor, if the job is more than he can take care of. The supervisor, who has many section foremen under his control, orders out as many gangs as are necessary, or, in the event that this is not sufficient, notifies the division engineer, who has under him a master carpenter and his forces, a master mason and his forces, a work train foreman and his crews, and a body of assistant engineers. Should the job transcend the ability of a single division engineer, he so reports to the superintendent of the division, who can double or treble or quadruple his forces.

How the Work Was Overseen

The Division Superintendent has the General Superintendent, with his several divisions, to draw upon. And in the event that the matter is of sufficient importance, the General Superintendent has the General Manager behind him, with control of all the resources of the other General Superintendents. And finally, if the matter is big enough, there are the vice-presidents and all the resources of the great Pennsylvania Railroad System east and west of Pittsburgh.

Thus the General Manager's office receives the reports, and as soon as there is really widespread and extended trouble he organizes his office forces and divides the work up among his staff officers. He first assembles men and material. In a case such as the present sufficient material is not available, so he must put in orders for this material and place it where it can be used to best advantage. The extra-labor market, too, is affected, because the cities along the damaged lines needed all the labor that they could get for themselves. The other roads were equally hard hit. There could be no assistance from them.

The division officers never wait for orders. They collect their men and material and hasten to the trouble. It is the extra material that is wanted. Their general

superintendents step in and furnish them with what they will need in addition. This they would do generally, by ordering the superintendent of another division to gather up his men and tools, go to the stricken division and there work under the home officers to the best advantage in accomplishing the task at hand. It usually happens that there are two ends, and they work toward each other, to close up the trouble.

Where washouts are long and deep, the most essential tool is a pile-driver. It is known as the repair tool *par excellence*. It is quicker to build a trestle across a big break than to fill in. In fact, a filling cannot be made if a bank is gone, and so a trestle has to be built anyway. Thus, it is necessary to get a sufficient number of pile-drivers. It is almost impossible to buy them, for they are only made as ordered—and this takes time. It is well to remember that the better the condition of a road, the fewer repair tools of this nature it possesses. It is the poorly constructed roads that must carry the greatest proportion of capital in their repair outfits. These are their stock in trade, so to speak.

It falls on the engineering department immediately to prepare a complete list of steel bridges lost or damaged, and to make full and detailed estimates for replacing these structures, together with the plans which the bridge-material makers require when a bridge is ordered. It takes some months to build a steel bridge, and therefore long before the temporary repairs are made all plans for new work must be completed. This was more than ever necessary in the present crisis, since two whole States were involved in the flood and many railroads, and because the road which first got in its orders would have its work done first. The broken bridges must be replaced by permanent steel structures before the winter and spring freshets come again. The temporary work will not hold when the ice goes out in the rivers again. The day after the big 600-foot, four-

span bridge went out at Tyndall a contract was placed for an entire new bridge of larger dimensions than the one destroyed, and the same day the mills had begun on the order.

The Commissary

The very foundation of protracted repair work is the establishment of a line of commissary. An army travels on its stomach, and it must be well fed and well housed. The men can work the first night or two without sleep, but a long-drawn-out fight requires rest and relief. So it becomes necessary for the division officers who are out on the job—that is, in the field—to so organize that they can work night and day, and always have fresh men. An army moving as this one is cannot



Pennsylvania Yard at Zanesville, Ohio

live in towns and return to and from its work each day. It is on the march. As fast as one break is fixed up it moves on to the next. The work never stops. A section of the men are either working or sleeping all the time, day and night, until the job is completed.

All this presents the really great problem. Food, rest, warmth, comfort. Warmth was an easier matter in the old days when each car had its own stove. Now there must always be a live engine at hand to send its steam through the car pipes, for the weather is no more solicitous for the comfort of the men than the flood. Rain and sleet and a freezing temperature do not wait on the job; they attend it. If it so happens that the materials for the carpenters' work, say, runs out for the minute, the carpenters go in the warm cars, dry their clothes and get what rest they can, ready to be up and out again when their material shall have been brought up. Time is the essence of the contract, and none of it can be wasted. Thousands of men are at work in different detachments at many widely separated points—and each man has his own bunk.

The Motive Power Department is the one called upon to fix up the temporary camp cars for the men. The nucleus of this in time of peace is the wreck train, which, as it must be ready to move any minute, day or night, of course, has always a commissary. The bridge carpenters, too, have a camp car, and these can be enlarged at once by the cooking force available. With these as a beginning, there is added all the additional commissary necessary to supply the army, no matter how large it is.

For the sleeping accommodations old cars are taken, the seats removed and bunks built in. For the dining cars, long tables are set in lengthwise of the cars after the seats have been taken out. Besides, so far as the discarded equipment of the road will supply dining cars and sleepers, they are utilized. The Penn-

sylvania has many of these, which have gone out of regular service to make way for modern steel ones.

The unit, then, with the campaign under way, is a four-car one—the supply car, with a kitchen car between two diners, each of the latter capable of seating fifty men at a time. Sleeping accommodations are added according to the number of men at work.

Meals are served four times in each twenty-four hours—at 6 A. M., noon, 6 P. M. and midnight. As the meals always must be warm, nourishing and appetizing, it can readily be seen what a proper handling of the commissary department means. Fresh food must be got to each one of these trains each day, and that alone was a tax on a system which in the first days after the flood was using to the utmost all its available trackage for the forwarding of supplies, construction material and such other trains, passenger and freight, as had to be moved.

These trains, too, supply the men with extra shoes and other articles of wearing apparel—trousers or shirts—and tobacco as well, and always without any charge for them. The commissary is the life of the effort to reopen rail communication, and on it depends, in great measure, the speed and general efficiency of the work.

III

Caring for Passengers

Wednesday morning, March 26th, the Pennsylvania had some nineteen marooned passenger trains in the flooded territory. The officers of the road made it their first business to look after their passengers on these trains. Every train, except the one caught in the Dayton station, was either backed or pulled onto high ground and the passengers fed and housed either on the trains or, if their locations allowed, were taken care of in hotels or private houses. The company paid all the bills.

The passengers passed the time in any way they saw fit; and several men on one train that was held in Brad-



Bridge No. 37, One Mile North of Rockford, Ind.

ford—as there was a printing office near by—amused themselves by getting out a newspaper which they called “Pan Handle No. 10,” in honor of the official designation of their train.

The Passenger Department in Pittsburgh, early this Wednesday morning, sent agents to Altoona to board each incoming passenger train. All passengers for points west of Pittsburgh were personally and individually interviewed and offered a choice of the following alternatives:

Their tickets would be immediately redeemed in cash;

They might return to their starting points free of charge, and the company would also refund them the

money paid for tickets between their starting points and Pittsburgh;

They could hold their tickets to points farther west and have free transportation home, returning when the railway to the west was opened; or

The road would take them as far as it could, and then, if any other line of railway was open, the road would see to it that their tickets were honored on these lines—no matter how roundabout the route.

The passengers were not asked for an immediate answer, but were allowed the time between Altoona and Pittsburgh—three hours—in which to come to a decision.

Generally speaking, those who were on their way home decided to keep on going, while the others took free passage to their starting points.

The cashier's office ran twenty-four-hour sessions, and a passenger was delayed only so long as he would have been to cash a check in a bank. There was a rate clerk in attendance to figure up the amount of money due on a ticket. When this was done, the passenger handed it to the cashier and got his money. In every city on the system the same process was in vogue.

Messages were forwarded to various passenger agents in the flooded districts two or three hours before the wires went down, telling them to go ahead and use their own judgment, without instructions, to make the passengers comfortable. Men were sent from these offices to the marooned trains, so that each train had some department official to look after it. In these last messages sent was this warning: "Be careful to notify all passengers before and after boarding all trains of the exact situation."

There was little difficulty in providing for the passengers in the seven trains marooned at Columbus, Ohio. They were on high ground on the opposite side of the river to that section of the city which suffered from the flood. There were many sleeping cars and diners in these trains, and a city to draw upon. They were pro-

vided for by the company just the same, and were forwarded either east or west at the first opportunity.

Quite different were the experiences of the passengers on the three trains which were marooned at Bradford, Ohio. The first of these trains, consisting of five cars, left St. Louis at 7 A. M., March 24th. It had managed to get two miles east of Bradford at 8.45 P. M., when it was ordered back to high ground.

The second train left Chicago for Pittsburgh at 7 o'clock Monday evening, and at half-past 5 Tuesday morning was safely moored at Bradford. The third train was a Chicago-New York train of eleven cars, four of which were sleepers. This train had pulled out of Chicago at 9.45 P. M. Monday, and had arrived at Bradford at half-past 10 Tuesday morning.

As many of the passengers as could be cared for lodged in the sleeping cars. The others slept in the railway Y. M. C. A. at Bradford. This Y. M. C. A. furnished meals for every one up to Saturday morning, which was the limit of the Bradford visit.



Four and One-half Miles West of Coshocton. Bridge No. 100
Destroyed, Breaking Main Line Between
New York and St. Louis

On Saturday a special train was made up to take all the marooned passengers of these three trains out of Bradford. The road had been repaired as far as the bridge at Piqua. Over this bridge, which, though it was still in place, was unsafe for the passage of trains, the travelers proceeded on foot. A plank walk had been laid, railings raised on each side, while the whole bridge was lighted by electric lights. It was a rather cheerful procession that moved east across the Great Miami River.

The passengers then boarded their second special train, which carried them to another unsafe bridge which crosses the Scioto River, about four miles west of Columbus. Here another transfer was made on foot, also over a boardwalk between the rails, though this time light was furnished by oil torches, which added to the weirdness of the scene. There were plenty of trainmen here, who carried the wanderers' grips. A third special pulled these travelers into Columbus, arriving there 20 minutes before midnight, and such of them as desired to took their fourth special for the east, at 10 minutes to 2 Sunday morning.

The single sheet, two-paged "Pan Handle No. 10" is dated Thursday, March 27th, from "The Isle of Bradford." The poet, who is very active throughout the publication, then contributes:

"Little drops of water, falling through the air,
Puts the Pennsy Railroad on the bum for fair."

There follows a list of fifty-three names and addresses of passengers on the train, who own 1 per cent. or more of the capital stock of this corporation, which purports to be sworn to before a notary public, who adds after his signature, "My commission expires as soon as these dog-gone waters go down, as I am moving to the mountains."



Cincinnati—Smith Street Freight Station when the Ohio River was at its Highest Stage

Under the headline, "The Excursion from Bradford Isle," there is much more of truth than of fiction. It makes interesting reading and also throws some light on the situation: "At 2.30 the welcome news of a trip to Piqua was announced." Welcome news it was, notwithstanding the horrible drizzle that continued to pour down. The idea of a train that actually moved appealed to all.

"Anxious to take the trip, we were the first to arrive on deck, and were greeted by a vigorous pull from the engine which gave us the appearance of real rail-roaders. We started slowly, to be sure. If anything was ever beautifully said, it was 'Water, water everywhere.' The entire country seemed immersed. Finally Piqua was reached. We shall probably never forget the sights that greeted us—the swollen river, the broken bridges, the floating houses and trees; such havoc as we had never imagined. We were marveling at the awful-

ness of the scene when it was suddenly announced that our boat would return in 30 minutes. We waded back, fully reconciled to the fact that our visit in Bradford was to be of some duration. But what did we care, if Bradford was still willing to welcome and entertain the passengers of the fated No. 10?"

The poet speaks again:

"Twenty good men in No. 10,
Each with a wooden fountain pen;
Each with a pipe or cigarette,
Sat in a Pullman, watching the wet.

"The driving rain kept coming down,
It hit the tracks, it drenched the town;
And then the rain gave place to snow,
But still the train refused to go.

"We're here because we're here, you see;
Excuse this weak hilarity."

And the poet concludes that, though they were at first worried over the delay, still there is a heap of people homeless and worse, and the Lord is with them at Bradford.

Getting Out Marooned Trains

Exactly 329 marooned passengers passed over the bridge four miles west of Columbus Saturday night.

The train that left Cleveland at 9 o'clock Monday night on the Akron division, for Columbus and points farther south and west, carried 114 passengers. About 4 o'clock Tuesday morning this train had arrived at a little station called Brink Haven, 106 miles from Cleveland. It had been due in Columbus two hours earlier than this—and Columbus was still 60 miles to the south. But the going had been very bad and great care had been necessary, particularly over a bridge between

Millersburg and Killbuck, some 14 miles north of Brink Haven. This bridge later went out.

The conductor's orders at Brink Haven had a finality to them: "Tell (the official name of the train) they're stuck. Keep out of water, if they have to use the main track."

There was high ground about Brink Haven, but around about was the worst of the flooded district. The track to north, whence they had come, was an ascending grade.

The conductor remained in the station for further orders or information after he had told the engineer to back away from the water as it approached. The water rose very fast and threateningly about the station itself, and the conductor busied himself in assisting the station agent to remove his tickets, books and papers to a safer place. The ticket agent assured the conductor that he could get a boat whenever he wanted it. The pair worked along until well after daylight, and then, with the water knee deep over the platform, they whistled



Bridge No. 83, Akron Division, Over Kokosing River. This is a Later View of Bridge Shown on Page 13

for the boat which didn't come. So they captured some railroad ties as they floated past, nailed cleats across them, and on this improvised raft started for the train. It was a two-hours' job to reach dry ground, and once during the trip the conductor fell off the raft in water over his head. He managed to clamber back again, none the worse for his ducking. He finally reached his train and informed his passengers that, as the tracks were gone on both sides of them, they would have to make up their minds to defer further traveling for a while.

There were two houses in this town which the conductor rented. At these houses breakfast was served from 9 to 11 A. M. and dinner from 4 to 6 P. M. The farmers in the neighborhood soon heard of this temporary addition to the town's population, and they brought eggs and butter and chickens and farm produce generally. Just to pass the time, two of the lady passengers said that they would prepare the meals at one of the houses.

There were six telegraph operators marooned at Brink Haven. They installed instruments in the baggage car and sent all the messages which the passengers desired. There were plenty of them. The wire service between Akron and Brink Haven was never entirely out of commission, which gave a few of the passengers the idea that they were being detained longer than was quite necessary. They came to that conclusion early in the week. They changed their minds later. When the water had gone down and the train was backed up to Killbuck on Saturday, where every variety of conveyance, from antiquated surrey to a plain farm wagon, had been collected to carry them over the six miles of an awful road necessary to be traversed to get to the special on the Millersburg side of the break, several lost their desire to get home, and decided to enjoy a little longer the hospitality of the train. It was Monday night before the last passenger decided to travel north. They saw then



Bridge No. 68, Brink Haven, Ohio

what the flood really amounted to and how tremendously severe the damage had been.

* * * *

As early as Monday night at 8 o'clock word was received in Pittsburgh of a washout at Mile Post 167, a point eight miles east of Mansfield, Ohio, and on the main line of the Fort Wayne to Chicago. The report stated that the tracks were washed out in a cut for a distance of 60 feet, with an average depth of 20 feet.

A wreck train was started at once from Pittsburgh with the bridge carpenters. Just this injury to the road was of sufficient importance so that not only the superintendent of the division, but the General Superintendent of the Northwest System, left at midnight on a special train. It was raining hard.

There was no delay for the first 115 miles, when the special train ran into water—a foot and a half of it on an average for almost two miles. They got through this all right by running slowly while one of the train-

men walked ahead looking out for ties and other floating obstructions. In another ten miles water was again encountered, and when the train arrived at Wooster it was almost up to the floors of the cars, and so deep and swift as to make further progress west impossible. Killbuck Creek runs through the Wooster bottoms, and it had covered the country as far as the eye could reach. The roadbed through this section is seven feet above the ground level and no water had ever before got over the tracks. Now, with the embankment as a dam, the water was shooting into the air, making a wonderful spray, so great was its force and so swift was the current. Killbuck water rose all day Tuesday, but began to fall that night. Wednesday morning the pile-driver was put to work as soon as the track was in sight. The pile-driver had headed the procession from Pittsburgh. In the meantime the Tuscarawas River had got going in the rear, and the wreck train and special were thus cut off on both sides of Wooster. All three tracks were out for a mile and a half at Wooster—great chasms every few feet.

Some time on Tuesday night Governor Cox had sent out a call for the National Guard to proceed immediately to Dayton, on account of the great loss of life reported there. One company of the Fourteenth Regiment hailed from Wooster. This company was assembled by the riot call, but when the men were ready to move they found that there was no way for them to get out of Wooster, as all the railroads, county roads, and electric lines were washed out.

The General Superintendent was cut off all Tuesday and Wednesday from wire communication with headquarters. He received word, however, that in addition to the washout first reported, which was still many miles to the west of him, three steel bridges and one stone arch were badly washed at either end for from 40 to 60 feet in length, and from 10 to 15 feet in depth; that three



North of Bridge No. 123, North of Warsaw, Ohio. Track was,
Before the Flood, on a High Embankment

steel bridges were completely swept away, leaving chasms 300 feet in length and 20 feet in depth; another steel bridge was damaged and two steel arches entirely gone; one about thirty feet in width, with embankment approaches twenty feet high, left a hole 600 feet long and 25 feet deep.

The bridge forces, 500 men and one pile-driver, had succeeded by Wednesday morning in reaching a point four miles west of Wooster, where the trains were again stalled by water over the tracks. Two telegraph operators were rescued here after a two-day maroonment in their tower. There had been no means before to get assistance to them.

By Thursday this force had left Wooster 18 miles in the rear, when they found the roadbed washed out in two places 800 feet long and 8 feet in depth, with the rails and ties entirely swept away. All day was required to build a temporary track on the ground to enable them to reach Loudonville, where they arrived Friday evening, only to find themselves confronted with another 600-foot break.

Many men had been met who asked transportation to various places. Only one met with success. He had been refused, along with the others, when he finally announced that he was the Loudonville baker—and Loudonville's only baker. He said that if they would give him a lift he would bake all the bread that the outfit needed—in Loudonville. As his case seemed to fall under the head of either necessity, charity or mercy, he got his ride. And then he baked the bread.

IV

Rescuing the Railroad

In the meantime other gangs had been organized and were putting the track in safer condition pending the arrival of material from the east to make the final repairs. Before the General Superintendent left Pitts-

burgh he had arranged for complete commissary trains, including a hospital car, a doctor, and all necessities for caring for the sick.

Emergency material trains followed in quick succession.

The end of the washouts was only 15 miles west of Loudonville, and between this point and Wooster all the bridges above referred to were located. Thus the greatest damage was done within a space of 33 miles. The emergency trains carried a complete telegraph and telephone outfit. There was a telegraph repair train, too. By Friday evening there was full telegraph and telephone connection with Pittsburgh.

While this work was going on from the east, other pile-drivers and their gangs were working from the west end of the washouts. By noon of Thursday, April 3d, they met. There was, too, at the same time, work going on by half a dozen other organized gangs at different places on the division, each in charge of a responsible engineer. For the first two days every one worked night and day, soaking wet most of the time. After the rain ceased, the thermometer fell below the freezing point.

Heretofore two days—and that happened only once—was the longest period of time the main line of the Pittsburgh, Fort Wayne and Chicago Railway was ever blocked.

* * * *

The General Superintendent of the Central System, whose headquarters is at Toledo, Ohio, had an appointment with the Division Superintendent of the Akron division for an inspection trip over this division (which runs south to Columbus, Ohio), on Tuesday, March 25th. He left Toledo on Monday and spent the night in Cleveland. At midnight he received a message from the Akron Division Superintendent saying that the very hard rains and high water were causing so many washouts that the trip would have to be postponed. The

General Superintendent immediately came to Akron; and there he remained through the campaign, as Akron was better suited strategically for control of his territory. Besides, his wire communication was better. Toledo was shut off for six days.

Upon his arrival in Akron his first efforts were directed to finding out the extent of the floods, not only on the Akron division, but on his other divisions as well—Zanesville, Toledo and Marietta. There was such a general breaking down of the lines of telegraph and telephone communication that it was difficult to get any sort of a comprehensive notion of the extent of the floods. Altogether it was early apparent that his system had never suffered any disaster approaching this one.

The Akron division superintendent, after spending this Tuesday in receiving reports of the situation and vainly endeavoring to ascertain the real conditions, decided to get through his flood territory personally, by any means that might be possible—on foot, by boat, by train or what not.

So at 5 o'clock Wednesday morning the division superintendent and his engineer set out. They made the first seven miles by train, when they came upon a five-hundred-foot washout, through which the water was pouring with such a strong current that a detour of three miles on foot was the only way to get around it. The next six miles were also made on foot, which included a climb along the hillside for about a mile, as the tracks for about this distance were five feet under water. At Warwick, fourteen miles from Akron, they managed to get a boat, which carried them seventeen miles and enabled them to reach a switching engine which had been sent out from Orville to carry them to Orville.

The Akron division crosses the main line at Orville, and it was only 10 miles to the west of Orville that the General Superintendent of the Northwest System was



Bridge No. 120, Over Killbuck Creek, Akron Division

fighting his battle at Wooster. Next, a work train was overtaken and the journey continued 18 miles to Holmesville, where the heavy washout district began. There was no going by the railroad or on the roadbed any farther, so they secured a wagon and took the hill road to Millersburg, a distance of six miles. They arrived here after dark, having covered a total of 51 miles since 5 o'clock in the morning.

The water fell somewhat in the night, and in the morning the first means of conveyance used was a hand car. Their progress was very slow, because the water was generally over the tracks in the washed-out sections, and the track itself covered with débris, which had to be removed to permit the hand car to proceed at all. A good part of the way the hand car had to be poled along. Between Millersburg and Killbuck, a distance of six miles, several miles of track were actually washed out, generally to a depth of five or six feet. It required the entire morning to cover this stretch.

The Cleveland train, marooned at Brink Haven, was visited. After that the trip was continued, meeting trouble at short intervals. It was over the road that the Division Superintendent had just come that these marooned passengers would be taken north in two days. And it had to be repaired in the meantime.

Traffic was not restored over the entire Akron division for ten days, and that in the face of a force of more than 1200 men working near their base of supplies—and at high pressure.

The Central System alone lost nine steel bridges and had four others so damaged that they must be reconstructed. The washouts were so numerous that it is the literal truth to say that hundreds of sections of track had to be repaired before any engine or train could pass over them.

At Jeffersonville, Ind., the water on one side of the "Panhandle" fill was twenty feet higher than on the other or city side. Hard work by the road's employes kept this bank from caving in or giving way. Tarpaulins were used to prevent the bank from washing and sandbags for filling purposes. More than 17,000 bags of sand and cement were dumped at the weak places. Had the bank given way it meant a depth of water exceeding twelve feet in various parts of the city. The Common Council was so impressed by the work of the road's employes that they passed a resolution thanking the Pennsylvania for *saving* the city!

The resolution was approved and signed on the 7th of April, 1913. The preamble reads:

"WHEREAS, The fill of the P. C. C. & St. L. Ry. Co., in Clarksville, Indiana, saved this city from being flooded during the recent high water; and,

"WHEREAS, The citizens of this city owe the P. C. C. & St. L. Ry. Co., and its officers, a debt of gratitude



Jeffersonville, Ind.—General View of the Fill. Water on One Side About Twenty Feet Higher Than on the Other Side.
If this Bank Had Given Way it Would Have Flooded
the Whole Town of Jeffersonville

that it will be impossible to pay because of the building and maintaining of said fill, and preserving the same during the recent flood."

* * * *

At Cincinnati, the passenger offices were kept open from 7 A. M. to 10 P. M., from March 25th to April 13th. Of course, there were thousands of inquiries there as to what railroad conditions were, not only by the travelers held up there, but by others who wanted to get to various cities as soon as they could rely on means of transportation. The Pennsylvania adopted a novel and very effective way of imparting this information at the least inconvenience to the traveling public. At 6 o'clock every evening, as soon as the officials had learned what the service next day would be, a bulletin was published giving full and correct information without the least regard to securing business. Of these bulletins there were published from 80 to 100, and they were sent to the other railway ticket offices, the hotels, clubs and newspapers. They came to be regarded—and properly—as the official railway time table. They saved an immense amount of annoyance and extra labor to the traveling public.

The Destruction in Figures

To go into detail of the Pennsylvania losses will hardly furnish an adequate idea of the losses as a whole, but it may be interesting to give a few totals, only suggesting that the problem met would not have been a simple one had the damage been concentrated instead of being widely scattered, and consequently very difficult to get at efficiently.

Number of bridges lost	24
Number of bridges damaged	50
Number of spans lost	39
Number of spans damaged	48

Bridges lost—Length in feet of road	3597
Bridges lost—Length in feet of single track.....	4318
Bridges damaged—Length in feet of road.....	4189
Bridges damaged—Length in feet of single track.	6239

The estimated cost of replacing these bridges is \$1,027,116.

Length of trestle built for single track, in miles..	1.94
Length of trestle built for double track, in miles..	0.96
Length of trestle built for three tracks, in miles..	0.02
Length of trestle built—Miles of road.....	2.92
Length of trestle built equivalent to miles single track	3.92

The estimated cost of these trestles is \$336,144.

Length of single track road requiring repairs, in miles	88.7
Length of double track road requiring repairs, in miles	41.1
Length of three-track road requiring repairs, in miles	2.5
Length of four-track road requiring repairs, in miles	2.8
Length of road requiring repairs, in miles.....	135.1
Length of road requiring repairs, equivalent to miles single track	189.6

The estimated cost of these repairs to the road is \$1,396,290.

In addition to the above, damage to stations and other buildings was \$70,900; to equipment, \$84,285; and to telegraph lines, \$107,505.

* * * *

The direct property loss to the Pennsylvania is estimated at \$3,600,000 in round numbers, and it provides the most pertinent of arguments for allowing the railroads to so fix their rates as to provide for a surplus. The cost of repairment, under the ruling of the Inter-

state Commerce Commission, must be charged to operating expenses. So heavily have low compulsory rates weighed on many of the public utilities companies that the damage done by the flood has wiped out the surplus of many of them and they are now in the hands of receivers. Others have been very badly crippled.

Typical Troubles

Where all did so well in the face of unexampled disaster, it seems almost invidious to select one division for more extended treatment than another. But there are reasons why the Pittsburgh division, the main line of the Pan Handle from Pittsburgh to Columbus, may be selected as typical. In the first place, it is a main line; in the second place, it got an awful man-handling; for a third reason, its damage was late and not wholly



Zanesville, Ohio. Pennsylvania Bridge Over Muskingum River

expected, and finally, its tracks were under water substantially for a distance of 51 miles—from Tuscarawas, 94 miles west of Pittsburgh, to Black Run, 45 miles east of Columbus. Zanesville is only 16 miles to the south of this line, and the big lake drained into and through Zanesville.

It was Tuesday morning, March 25th, as the officers of the Pittsburgh division were starting on their spring inspection trip, that they received news of trouble on other parts of the system. As the heavy rain continued to fall and the storm increased in intensity, it was decided to postpone the trip and return to headquarters, where they would be in better position to extend assistance to other divisions, or even to help themselves in case their particular line of railway should suffer.

They reached Pittsburgh at 5 P. M. Tuesday and soon received reports of damage to their own division, though nothing serious. There was a washout near Black Run—eventually the lake's limit to the west—but this news wasn't received until a quarter after 9 o'clock. In a little more than an hour came the report of the destruction of the big bridge at Tyndall. This meant that the line was cut in two, and that conditions with them were very serious. And, as it turned out, the attacking forces from the east and west were not to reach and complete the trestling where this bridge had stood, and thus open up the line again, for almost three weeks—with 1400 men working from the east and from 600 to 800 men working from the west! The Muskingum River rose 13 feet in the darkness of Tuesday night and Wednesday morning. And that was only the beginning.

The trackwalker immediately east of the Tyndall bridge stuck to his job until the water was well over the tracks and actual danger menaced any approaching train. Then he walked down into the water to the shed telephone and made his report to his father, the section

foreman. He was standing in water breast high to telephone. "All right," his father answered; "now, you get for the hills." And that was about all he could do.

To the west of this bridge a couple of miles the trackwalkers, with their foremen, were about to follow others down to the bridge. The water then was so high here as to be almost up to the tracks, although the embankment is a very high one. This portion of the road in any previous flood had always been easily able to take care of itself. There was no fear for the bridge either, though it was closely and continuously watched. By this time the Big Four was detouring its trains over the Pittsburgh division, as some of their lines were already out of commission.

One of the trackwalkers decided that he needed, or might need, a rope and an axe for work at the bridge, so the foreman said that he and the others would go right



Street Bridge, Sharon, Pa.

on on their hand car without waiting while this track-walker secured his equipment. When he got his tools he was to follow after on foot.

The hand car reached the bridge, with the track under them in good condition all the way. The water was just seeping over the tracks as the other track-walker ploughed after them, impeded by his heavy rain-coat, his lantern and his extra load, in the effort he was making to overtake the hand car.

The rain was coming down in torrents. About half way to the bridge he came upon a washout, where the water had torn a great hole in the embankment and the tracks were already sagging and without support. He turned immediately, threw away his raincoat and his axe and rope, and, with his lantern and one fusee, legged it at full speed in the direction he had come, for he heard an approaching train whistling not far away. He knew that he must stop the train. The storm was so severe, the rain so heavy and the wind so high, that his lantern might go out at any time. The conditions, even, were so bad that the engineer might not see the lantern. When he saw the train he lighted the fusee and waved it as he ran; and the train was stopped not far in front of the washout. It proved to be two of the Big Four passenger trains being detoured, combined as a "double-header," with several hundred passengers. It backed up all the way to Columbus in safety.

Conesville, less than two miles from the Tyndall bridge, was this trackwalker's home. The water was rising fast in Conesville. His duty to the railroad done, our trackwalker's attention was directed to his personal and domestic interests. He was the owner of a litter of pretty well-grown pigs, which meant a good deal to him. He also had a haymow not far from where the pigs were kept. Through water waist deep he carried these pigs and then lifted them up to an assisting neighbor, who stood on the top of the mow. And to hear him

tell the story, there was more excitement and difficulty attending the lifting of a 100-pound pig over his head—even though the pig was submissiveness itself—than in wondering whether or not he could flag the Big Four double-header, with its dozen coaches of living human freight. To fill to the brim his cup of adventure he spent the night in a church pew—the church was on good high ground—which was as novel an experience to him as either of the other two which had immediately preceded it.

The impelling cause of the destruction of the Tyn-dall bridge was the lodgment of a house and two haystacks against one of the big stone piers. The current was so swift and powerful that, with this obstruction to work against, the water was driven down against the foundation of the pier, scoured it, toppled it over and dropped the steel structure into the river. One of the trackwalkers had not been off the bridge a minute before it fell.



Bridge No. 146, Over Rocky Fork, Eastern Division



Bridge No. 48, Three-quarters of a Mile East of Somerville, Ohio

When the Division Superintendent knew that his line had been cut in two by the destruction of this bridge what he particularly desired was a first-class engineer on the west side of the break, to take charge of the work there. He had his own division engineer on the east side with him.

Executing Orders Under Difficulties

There was a headquarters engineer who had left Pittsburgh late on Tuesday and gone as far as the big shops at Dennison, 90 miles from Pittsburgh. From that point on Wednesday, by hand car and on foot, accompanied by the master carpenter of the division, he had worked his way 32 miles to Coshocton, which is only 5 miles from the Tyndall bridge. As the master carpenter soon realized his danger of being cut off from his men if he stayed much longer, he turned for home while the way was still open.

Now, this engineer was a man with a reputation for going where he was ordered and doing what he was

ordered to do, no matter what were the conditions confronting him. When he had reached Coshocton he had walked to the hills, and over the waters made sure, with the aid of his field glasses, that the bridge at Tyndall, 5 miles away, was really down. When he returned to the station at Coshocton, he received a request by telegraph from the Division Superintendent to go to Frazeysburg, 15 miles to the west of the broken bridge, and take charge of repair work from that side of the break. The superintendent was asked at the time how he expected the engineer to get out of Coshocton in any direction, and to cross the Muskingum in the bargain. He answered that he had not the slightest idea, and that he also had not the slightest doubt that he would find some way to do it.

It was 6 o'clock Wednesday night, with the flood almost at its height, that the request was received. The engineer wasted no time. For fifty times their regular fee, two ferrymen at Coshocton agreed to try and land him on the hills to the south. They put out in the rain and darkness and the engineer was over the river and on ground—but not very dry ground—after a trying and dangerous trip lasting two hours and a half. Here he hunted up a farmer with a pair of stout mules, and aided by a bribe of large dimensions, induced him to take the night drive. They floundered along through the mud for many hours, but before morning the Pittsburgh division had an engineer in charge at the west end of the big lake. He had “got through,” as it was expected that he would. And it is almost an anti-climax to record that just as he was, with such extra clothes as the work trains provided, he controlled the situation as engineer in command until the trestle at Tyndall was completed the 13th of April.

* * * *

It was on Thursday, March 27th—the matter of time was a very important one in the early days of the



Bridge No. 16, Over Walhondling River, Marietta Division

flood—that the little motor boat, the *Ora May*, was taken aboard the cars at Denison, carried 4 miles and then launched to go overland 33 miles to the assistance of a marooned tower operator near the Tyndall bridge. There was no craft nearer which it was thought could live in the flood.

When the waters retreated here so that the work of repair could begin, the country had the appearance of a land over which an enemy had passed in force and done its worst. Houses and outbuildings, farm implements, buggies and wagons of every description were familiar objects dotting the landscape. Where there had been fine stretches of roadbed on high substantial embankments, sometimes for a distance of a thousand feet, it would require a vivid imagination to conceive that it was ever more than a dreary waste of land. No ties, no rails, no embankments were in sight—just pits and chasms. The steel rails had been torn from the ties, and, like the ties, had been floated away by the flood.

The job was rather picturesquely expressed by a superintendent: "You organize your relief trains and your work train gangs and your material trains and your commissary and equipment. From that time you paddle right through, throwing a regiment here and there like an army, by boat or highway. You go as far as you can—and then keep going."

There is, on this division, the second oldest supervisor on the road. He is 67 years old. He took the destruction of his roadbed as a personal matter. When he had been driving his gangs for a week he had never had his clothes off; and all his rest had been occasional snatches of sleep, for an hour at a time, sitting in a chair.

The regulars cheerfully worked stretches of 24 and 36 hours to repair breaks, and thus make it possible for others to advance. This was the spirit that permeated the entire organization. To have been with this army

and to have seen what men can do and what they have done in the face of every kind of an obstacle of weather and nature is to get a very good idea of what real war is like. War cannot produce many more hardships or demand greater ingenuity, pluck, skill and spirit in facing and overcoming them.

V

Relief Work

The Pennsylvania Railroad announced publicly, as early as Thursday, March 27th, that it would transport free of charge every pound of relief supplies intrusted to its care for the devastated district, as well as the men in charge, and all doctors and nurses. They would be carried over the Company's own lines, if they were open; or over other lines, if the Pennsylvania was blocked; or over any known combination of lines and with the least possible delay. They would have the right of way under all circumstances. The city of Dayton was, of course, the great objective at that time.

There left Columbus at 6.30 A. M., on Friday, a fully equipped train consisting of a locomotive, tool car, commissary car, dining car and three day coaches carrying a force of 65 mechanics, picked men, the cream of the Columbus shops. This force was tendered the Governor of Ohio to relieve the situation in Dayton, or for any kind of work needed there when the city was supposed to be half a morgue. The men in this party could build, run, or destroy a city, from a mechanical standpoint. They included car builders—that is, workers in wood—blacksmiths, electricians and fitting-up men—men who can put together any piece of machinery that would be used under any normal conditions. There were also men familiar with the use of dynamite and high explosives. The tool car contained an outfit to move buildings or to wreck buildings; to raise or lower bridges or any like work. They brought with them rations for five days.

On their arrival in Dayton the coaches were turned into sleeping cars.

This train pulled out of Columbus in the early morning, passing through West Columbus, where the flood had done such awful damage, and over the unsafe bridge, four miles to the west, with full knowledge that it was unsafe. This was the last train allowed over this bridge, but the pressing nature of the errand demanded that the chance be taken. The men took it willingly.

After much detouring the train reached Dayton at a quarter to four o'clock in the afternoon. The foreman in charge was met by a freight agent, who, with sixteen others, had been marooned for twenty-three hours on the tops of freight cars in the Dayton "local yard." After some hours of effort the foreman found the proper official and announced to him that he had with him a force of mechanics from the Pennsylvania shops, which he was directed to place at the disposal of the authorities, equipped to perform any service to which it might be assigned. The foreman was told that while the organization had not yet been perfected, the crying need was water and light. Nothing, however, could be done until morning, owing to the strict rules of martial law. The curfew rang at 6 P. M., and no one without a military guard was allowed on the streets until 5 A. M. the next day.

Saturday morning General Wood divided this force between the water works, power house and the two plants of the Dayton Light and Power Company. Up to this time the Dayton authorities had done nothing in the way of reconstruction. The city was entirely without water for cleaning purposes in the district that had been flooded. There was no light at night.

Dayton at this time was covered with a deposit of mud varying in thickness from 6 to 15 inches; and the engines, pumps and dynamos in the power houses scarcely resembled machinery at all. The men turned

in with shovels and wheelbarrows and got the mud and débris out of the way. Then they took the machinery apart, cleaned it and put it together again. So rapid was their progress that at 10 o'clock Sunday morning the first pumps were started in the water works, and by noon of the same day the capacity of the water works had been reached and there was an ample supply of water available for all purposes.

The men had objected to the enforced layoff at 6 o'clock the night before. They said that in their railroad work they were accustomed to stick at a job as long as the men could stand it and *then* be relieved if the desired object had not been obtained in the meantime. The superintendents of these plants, after conferring with the military authorities, decided not to risk a night shift, and requested the men to return to their own quarters prior to the curfew, in order that there might be no question in case any one was hurt. The other squads had finished their work in the electric light plants by Sunday at curfew time.

When this force went to Dayton it was expected that it would have to do rescue work, remove dead bodies, fight fire, and, if necessary, dynamite buildings to check the progress of the flames. But rumor was ahead of conditions, and the fires had been already extinguished. The sanitary conditions, though, were ex-



Marietta (Ohio) Passenger Station. Water had
Receded One Foot



Zanesville Division, Pennsylvania Freight Yard

tremely bad. As soon as the water subsided the business men began to clean out ruined stock. The contents of grocery stores, meat markets and commission houses was dumped on the sidewalks and into the gutters. As soon as the water pressure was available they removed the mud and silt from the buildings, and this, too, was necessarily thrown into the streets. There was as yet no organization to remove this mass, and by Monday, March 31st, the air of the city was foul. Water and light were then the two public utilities that had to be working, if the city was to be cleaned. And they were now ready at hand.

There could be given a fairly long list of Federal and State government supply trains, troop trains and supply trains for the Red Cross Society and other relief committees handled between March 26th and April 5th, including a special train for Governor Cox and his party, on April 2d. Every nerve was strained and every chance taken to drive the relief trains through. What was done was done cheerfully and gladly.

The largest single movement was a train of thirty-seven commissary and supply cars, on March 31st, from Jersey City, consigned to Captain Nesbitt, paymaster United States Navy, at Dayton, Ohio. On request of the Navy Department, these cars were reconsigned and made up into four trains, three of which were forwarded to Louisville and the other to Marietta. The last of these trains reached Louisville on the morning of April 3d.

VI

The Floods Subside

The flood left Ohio almost as quickly as it came.

The trouble was that there were so many small breaks between the supply points and the big breaks that it was very difficult to get material when it was wanted. The general public—that part of it, at least, that does not live in the flooded districts—could not possibly imagine how bad the conditions really were, and what problems the railroads really confronted.

No cities in the United States have ever suffered in a single catastrophe as Dayton and Zanesville and Columbus suffered—to name only three of the hundreds of cities, towns, villages and hamlets, in the aggregate, that were partially or wholly under water for days. Business sections, the residences of the rich as well as the homes of the poor, were equal before the flood. In different cities different quarters were invaded and overwhelmed; but in the sum total immunity was vouchsafed to no particular class or interest.

To have stood in Dayton a week after the waters had subsided, either at the center of her business section or in her so-called “sealskin” district, the imagination could not conceive a reality of turbulent, swirling water, generally 10 and 12 feet deep, rushing through her wide thoroughfares and islanding her city blocks. Yet at this later time, when the Miami River had retreated within

its banks—and was not even half filling them—the city was a picture of woe and desolation. It was stamped on the face of every man and woman one met.

In the streets, on either side, were long ramparts of mud and filth and broken articles of all sorts and description, with a lane between these ramparts for the passage of vehicles. Streams of water were pouring into the gutters from the nozzles of lines of hose extending into the cellars and basements. The thump, thump, thump of the motor-driven pumps was the predominant sound. It was steady and monotonous and far-extending.

On the lawns in front of the houses, on the fences or in the windows of the houses were mattresses, carpets, curtains, books and every variety of household furniture and furnishings in process of drying—a bedraggled collection, at best—for there was substantially no artificial heat, nor had there been for ten days. Furnaces and stoves went out of commission with the coming of the water. One looked right into the houses, for there was rarely a bit of glass in the window frames. Pianos were, seemingly, a very general possession. They were warped and twisted, and their mud-stained keys were out of line. None of them looked as though any music could ever again be extracted from them.

Khaki-clad soldiers, rifles on shoulder, patrolled the streets—several to each block. They gave the only color to the scene.

Dayton and her sisters will be live and happy cities again, but then that time seemed a long way off.

* * * *

Can a story be interesting without the use of proper names? There are songs without words and there can be stories without words. Why not without proper names? If you can see what is done and why it is done, why bother as to who, individually, did it? A machine

cannot talk, but it does its task, and if you see the result in its finished state, it is not of so much importance just what particular parts performed the various steps. In an organization or system living, thinking men form the machine. The only difference is that they are animate beings and not inanimate parts.

This machine, too, is a delicate organism. It has been built up by years of study and effort. It is a machine which serves the public in all weathers and under all conditions. It carries hundreds of millions of tons of freight and tens of millions of passengers year in and year out. "Co-operation" is the lubricant which makes the machine move smoothly.

It was co-operation between all the parts of this great machine of men which enabled order to come so quickly out of this chaos of flood and destruction. There was co-operation not only between the men of the Pennsylvania System themselves, but co-operation between them and other railroads, co-operation and mutual confidence between them and public officials.

This co-operation made things happen, things vastly for the public good. Does not this tremendous experience show what can be accomplished in the public service at all times by co-operation, by mutual confidence between railroad and government officials, and by a consistent plan to disregard the petty and the non-essential, and work unitedly to achieve big results?



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